

CLAIMS

What is claimed is:

1. A drive chip integrated laser diode module comprising:
 - a laser diode module main body to generate and emit laser light;
 - a plurality of first leads protruding outwardly from the laser diode module main body to receive electric power;
 - a drive chip;
 - a plurality of coupling holes in the drive chip in which each of the first leads is inserted, respectively;
 - a plurality of inner connectors in the drive chip, electrically connected to each of the first leads, respectively;
 - a plurality of second leads protruding outwardly from the drive chip;
 - a main board;
 - a plurality of lands provided on the main board, electrically connected to the second leads; and
 - a through hole in the main board through which the laser diode module main body passes;wherein the drive chip and the main board are integrally formed with respect to the laser diode module main body.

2. An optical pickup apparatus adopting a drive chip integrated laser diode module, the optical pickup apparatus comprising:
 - a drive chip integrated laser diode module comprising:
 - a laser diode module main body to generate and emit laser light,
 - a plurality of first leads protruding outwardly from the laser diode module main body to receive electric power,
 - a drive chip,
 - a plurality of coupling holes in the drive chip in which each of the first leads is inserted, respectively,
 - a plurality of inner connectors in the drive chip, electrically connected to each of the first leads, respectively,
 - a plurality of second leads protruding outwardly from the drive chip,

a main board,
a plurality of lands provided on the main board, electrically connected to the second leads, and
a through hole in the main board through which the laser diode module main body passes;
a base to reciprocate in a radial direction of an optical recording medium, the base comprising:
an installation portion where the drive chip integrated laser diode module is installed, and
an installation hole to which the laser diode module main body is coupled;
a bobbin connected to the base through a suspension, and movably installed in a track direction and a focus direction of the optical recording medium above the base;
an objective lens mounted on the bobbin to focus light emitted from the laser diode module on the optical recording medium;
a magnetic actuating unit provided across the base and the bobbin to actuate the objective lens in the track direction and the focus direction of the optical recording medium; and
a photodetector provided on the base to detect an information signal and an error signal by receiving light reflected by the optical recording medium.

3. The optical pickup apparatus as claimed in claim 2, wherein the drive chip integrated laser diode module is installed on the base by coupling the main board and the installation portion using a screw, and heat generated from the laser diode module main body is dissipated through the screw and the base.

4. The optical pickup apparatus as claimed in claim 2, wherein the laser diode module main body is installed in the installation hole so as to contact an inner wall of the installation hole provided in the base, and heat generated from the laser diode module main body is dissipated through the base.

5. A drive chip integrated laser diode module comprising:
a laser diode module main body to generate and emit laser light;
a drive chip to drive the laser diode module main body; and
a main board;

wherein the drive chip and the main board are integrally coupled with respect to the laser diode module main body.

6. The drive chip integrated laser diode module of claim 5, wherein the laser diode module main body comprises:

a laser diode inside the laser diode module main body; and
a plurality of laser diode leads protruding outwardly to apply electric power to the laser diode.

7. The drive chip integrated laser diode module of claim 6, wherein the drive chip is packaged with a mold resin in a state in which a semiconductor device is mounted on a lead frame.

8. The drive chip integrated laser diode module of claim 7, further comprising a plurality of coupling holes formed in the mold resin of the drive chip, wherein the plurality of laser diode leads are respectively inserted into the coupling holes.

9. The drive chip integrated laser diode module of claim 8, further comprising a plurality of inner connectors formed in each of the coupling holes, respectively, wherein each of the laser diode leads are respectively electrically connected.

10. The drive chip integrated laser diode module of claim 9, wherein the inner connectors are provided in the mold resin without protruding outwardly from the coupling holes.

11. The drive chip integrated laser diode module of claim 9, wherein the inner connectors have a predetermined shape in which end portions of the laser diode leads are inserted.

12. The drive chip integrated laser diode module of claim 5, wherein the drive chip further comprises a plurality of drive chip leads protruding outwardly.

13. The drive chip integrated laser diode module of claim 11, further comprising a plurality of lands provided on the main board, wherein the drive chip leads are electrically connected to the lands.

14. The drive chip integrated laser diode module of claim 5, further comprising a through hole in the main body through which the laser diode module main body passes.

15. The drive chip integrated laser diode module of claim 5, wherein the main board is directly coupled to a surface of the drive chip so that the structure is made compact.

16. A drive chip integrated laser diode module comprising:
a laser diode module main body to generate and emit laser light;
a drive chip to drive the laser diode module main body; and
a main board;
wherein the main board is directly coupled to the rear surface of the drive chip so that the structure is made compact.

17. An optical pickup apparatus adopting a drive chip integrated laser diode module, the optical pickup apparatus comprising:

a base to reciprocate in a radial direction of an optical recording medium; and
a drive chip integrated laser diode module comprising:
a laser diode module main body to generate and emit laser light,
a drive chip to drive the laser diode module main body, and
a main board,

wherein the main board is directly coupled to the rear surface of the drive chip so that the structure is made compact;

wherein the drive chip integrated laser diode module is coupled to the base by a heat dissipating member to dissipate heat generated by the drive chip integrated laser diode module.

18. The optical pickup apparatus of claim 17, wherein the dissipating member is a screw.

19. The optical pickup apparatus of claim 17, further comprising an installation hole in the base, wherein the laser diode module main body is contacting an inner wall of the installation hole to dissipate heat from the drive chip integrated laser diode module to the base.

20. An optical pickup apparatus adopting a drive chip integrated laser diode module, the optical pickup apparatus comprising:

a base to reciprocate in a radial direction of an optical recording medium; and

a drive chip integrated laser diode module comprising:

a laser diode module main body to generate and emit laser light,

a drive chip to drive the laser diode module main body, and

a main board,

wherein the main board is directly coupled to the rear surface of the drive chip so that the structure is made compact;

wherein the drive chip integrated laser diode module is coupled to the base so as to dissipate heat generated by the drive chip integrated laser diode module.

21. The optical pickup apparatus of claim 20, further comprising an installation hole in the base, wherein the laser diode module main body is contacting an inner wall of the installation hole to dissipate heat from the drive chip integrated laser diode module to the base.